

We Claim:

1. A method for detecting, preventing, and/or treating a condition requiring regulation of trophoblast invasion comprising modulating TGF β 3, receptors of cytokines of the TGF β family, HIF-1 α , or oxygen tension.

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2. A method for diagnosing in a subject a condition requiring regulation of trophoblast invasion comprising detecting TGF- β 3, receptors of cytokines of the TGF β family, or HIF-1 α in a sample from the subject.

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3. A method for diagnosing increased risk of preeclampsia in a subject comprising detecting TGF- β 3 in a sample from the subject.

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4. A method as claimed in claim 3 which comprises (a) collecting a sample from the subject; (b) measuring the levels of TGF- β 3 in the sample; and (c) comparing the levels of TGF- β 3 in the sample to the levels in women with normal pregnancies.

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5. A method as claimed in claim 4 wherein the levels of TGF- β 3 are measured in a sample from the subject during the first trimester of pregnancy.

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6. A method of regulating trophoblast invasion comprising inhibiting or stimulating TGF- β , receptors of cytokines of the TGF β family, HIF-1 α , or oxygen tension.

7. A method for increasing trophoblast invasion in a subject comprising administering an effective amount of an inhibitor of (a) TGF- β , (b) receptors of cytokines of the TGF β family, or (c) HIF-1 α .

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8. A method as claimed in claim 7 wherein the inhibitor is antisense to TGF β , or antisense to HIF-1 α .

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9. A method as claimed in claim 7 wherein the inhibitor is an antibody to TGF β .

10. A method as claimed in claim 7 wherein the inhibitor is decorin, fetuin, α_2 -macroglobulin, or thyroglobulin, or peptides derived from sites on the compounds that bind to TGF β 3.

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11. A method for reducing trophoblast invasion in a subject comprising administering an effective amount of (a) TGF- β , (b) receptors of cytokines of the TGF β family, (c) HIF-1 α , or (d) a stimulator of (a), (b), or (c).

12. A method for treating a woman suffering from, or who may be susceptible to preeclampsia comprising administering therapeutically effective dosages of an inhibitor of (a) TGF- β_3 , (b) receptors of cytokines of the TGF β family, or (c) HIF-1 α .

5 13. A method for monitoring or treating choriocarcinoma in a subject comprising administering therapeutically effective dosages of (a) TGF β_3 , (b) a receptor of cytokines of the TGF β family, (c) HIF-1 α and/or (d) stimulators of (a), (b) or (c).

10 14. A method for evaluating a compound for its ability to regulate trophoblast invasion comprising the steps of:

(a) reacting TGF β_3 and a receptor of a cytokine of the TGF β family, and a test substance, wherein the TGF β_3 and receptor of a cytokine of the TGF β family, are selected so that they bind to form a ligand-receptor complex; and

15 (b) comparing to a control in the absence of the substance to determine if the substance stimulates or inhibits the binding of TGF β_3 to the receptor and thereby regulates trophoblast invasion.

15. A method for evaluating a substance for its ability to regulate trophoblast invasion comprising the steps of:

20 (a) reacting TGF β_3 , HIF-1 α , and a test substance, wherein the TGF β_3 and HIF-1 α bind to form a TGF β_3 -HIF-1 α complex; and

(b) comparing to a control in the absence of the substance to determine if the substance stimulates or inhibits the binding of TGF β_3 to HIF-1 α and thereby regulates trophoblast invasion.

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16. A receptor complex comprising TGF β R-I (ALK-1)-TGF β RII-endoglin.

17. A composition for regulating trophoblast invasion comprising an inhibitor of (a) TGF- β_3 , (b) receptors of cytokines of the TGF β family, or (c) HIF-1 α in an amount effective to reduce trophoblast invasion, and a carrier, diluent or excipient.

30 18. A composition as claimed in claim 17 wherein the inhibitor is antisense to TGF β_3 or antisense to HIF-1 α .

35 19. A composition as claimed in claim 17 wherein the inhibitor is an antibody to TGF β_3 .